

WHAT IS CLAIMED IS:

1. A process for making at least one non-thermoplastic starch fiber, the process comprising steps of:
 - (a) providing a non-thermoplastic starch composition comprising a modified starch and water;
 - (b) extruding the non-thermoplastic starch composition through at least one extrusion nozzle terminating with nozzle tip, thereby forming at least one embryonic starch fiber;
 - (c) attenuating the at least one embryonic starch fiber with an attenuating air having an average velocity at the nozzle tip greater than about 30 meters per second; and
 - (d) dewatering the at least one embryonic starch fiber, thereby producing at least one non-thermoplastic starch fiber having no melting point.
2. The process according to Claim 1, wherein the step of attenuating the at least one embryonic starch fiber with an attenuating air comprises providing the attenuating air having a relative humidity greater than about 50% at the nozzle tip.
3. The process according to Claim 1, wherein the step of dewatering the at least one embryonic starch fiber comprises drying the at least one embryonic starch fiber with a drying air having a temperature from about 150°C to about 480°C and relative humidity of less than about 10%.
4. The process according to Claim 3, wherein the drying air has a temperature from about 200°C to about 320°C.
5. The process according to Claim 1, wherein the at least one embryonic starch fiber is dewatered to a consistency of from about 70% to about 99%.
6. The process according to Claim 1, wherein the step of extruding comprises extruding the non-thermoplastic starch composition through a plurality of

extrusion nozzles each terminating with a nozzle tip, thereby forming a plurality of embryonic starch fibers.

7. The process according to Claim 6, wherein the plurality of extrusion nozzles are arranged in multiple rows to form an attenuation zone extending from the nozzle tips to an attenuation distance in a general flow direction of the non-thermoplastic starch composition.
8. The process according to Claim 7, further comprising a step of maintaining the relative humidity in the attenuation zone greater than about 50%.
9. The process according to Claim 8, wherein the step of maintaining the relative humidity in the attenuation zone comprises providing a physical enclosure of the attenuation zone.
10. The process according to Claim 8, wherein the step of maintaining the relative humidity in the attenuation zone comprises providing a boundary air around the attenuation zone.
11. The process according to Claim 10, wherein the boundary air is supplied through a plurality of discrete orifices arranged to surround the attenuation zone and/or through continuous slots arranged to surround the attenuation zone.
12. The process according to Claim 10, wherein the boundary air has a velocity substantially equal to the velocity of the attenuating air.
13. The process according to Claim 10, wherein the boundary air has a humidity of greater than about 50%.
14. The process according to Claim 1, further comprising a step of providing a secondary attenuating air through at least one secondary attenuating air nozzle, downstream of the attenuating air.
15. The process according to Claim 14, wherein the step of providing a secondary attenuating air comprises providing the secondary attenuating air having a velocity

from about 30 m/sec to about 500 m/sec at the secondary attenuating air nozzle exit.

16. The process according to Claim 1, wherein the non-thermoplastic starch composition further comprises from about 0.1% to about 10% by weight of a cross-linking agent.
17. The process according to Claim 16, wherein the fiber has a salt-solution absorption capacity less than about 2 grams of salt solution per 1 gram of fiber.
18. The process according to Claim 1, wherein the non-thermoplastic starch composition has a pH from about 1.5 to about 5.0.
19. The process according to Claim 1, wherein the at least one non-thermoplastic starch fiber exhibits a wet tensile stress greater than about 0.2 MPa.
20. The process according to Claim 1, further comprising a step of collecting a plurality of non-thermoplastic starch fibers on a working surface to produce a fibrous web.